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Benefits From Centralized
Management Of Leased
Communications Services B-169857

Department of Defense

*UNITED STATES
GENERAL ACCOUNTING OFFICE*

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DEC. 22, 1971



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

DEFENSE DIVISION

B-169857

Dear Mr. Secretary:

This is our report on the benefits from centralized management of leased communications services.

We believe our review has revealed that centralized management of about 50,000 leases for minor communications services--those costing less than \$200,000 a year--is necessary and desirable. Therefore, we proposed that the Department of Defense make certain studies toward this objective. In response, the Acting Assistant to the Secretary of Defense (Telecommunications) advised us that such studies were being initiated.

Subsequently we were informed that responsibility for the conduct of these studies had been assigned to the Joint Chiefs of Staff. We plan to evaluate the results of the studies.

This report contains a recommendation which is subject to the provisions of section 236 of the Legislative Reorganization Act of 1970. We shall appreciate receiving copies of the statements you furnish to the specified committees in accordance with these provisions.

Copies of the report are being sent to the Director, Office of Management and Budget; the Secretaries of the Army, Navy, and Air Force; and the Director, Defense Communications Agency.

Sincerely yours,

For Director, Defense Division

The Honorable
The Secretary of Defense

D I G E S T

WHY THE REVIEW WAS MADE

The General Accounting Office (GAO) examined into the policies and procedures in the Department of Defense (DOD) for the use and control of minor leased communications services within the United States.

Classified on a cost basis, a minor service is one which costs less than \$200,000 a year to lease. Of the \$236 million which DOD spends annually on leased communications services, about \$187 million is for 50,000 minor leases. More than 13,000 of these leases having a yearly lease cost of almost \$74 million, about 30 percent of the total, are for services dedicated to a particular user, contrasted with common-user services.

The leased services are used to carry out the command and control, logistics, and administrative functions of the Office of the Secretary of Defense, the military departments, and the Defense agencies.

FINDINGS AND CONCLUSIONS

Most leased services are approved within the military departments without review or approval by the Office of the Secretary of Defense. This is because they do not meet the criterion of costing more than \$200,000 a year to lease, which is necessary to qualify for Office of the Secretary of Defense review. (See p. 9.)

Often a separate service approved at the departmental or command level is part of a large network which, if considered in its entirety, would meet the criterion for higher level review. (See p. 10.)

The approval procedures for services which do not qualify for Office of the Secretary of Defense review differ among the military departments. Review and approval authority is at the departmental level in the Navy. In the other departments approval of services costing less than \$100,000 a year has been redelegated to the major commands. (In August 1969 the Air Force withdrew this authority from the commands as an interim measure.) (See p. 9.)

No independent evaluation
or coordinated control

DOD has established the Defense Communications System--a worldwide, long-distance, Government owned and leased system--and the Defense Communications

Agency to manage the system. DOD, however, has not established a complete inventory of its communications resources. Usage information is not always available. What information exists is not always reliable. Users of communications systems do not always indicate the purpose of their requirements.

Because the offices responsible for reviewing new requirements do not have complete information on existing systems, they cannot evaluate new requirements or existing resources from a comprehensive systemwide viewpoint. (See p. 14.)

In each DOD component, a validating office is responsible for independent evaluation, including certain funding and technical considerations, of new requirements and existing sources of communications systems.

These offices, however, are hampered in performing their reviews by a lack of sufficient data. Army and Air Force offices can only recommend disapproval or alternative means of providing a service. Reevaluations of existing services, if made, are performed by the user of the service. (See pp. 25 and 29.)

Need for a central authority

A central authority with adequate information on DOD communications services would be in a position to prevent the start or continuation of uneconomical services.

To illustrate the potential savings which could be achieved by a central authority:

- Use data had not been developed for five of the 15 terminals of the Air Force Personnel Facsimile Network. Such data, obtained at GAO's request, showed that the average use for each terminal ranged from 18 minutes to 5 hours a day. On the basis of this information, the Air Force discontinued four terminals at savings estimated at \$23,700 annually. (See p. 21.)
- In 1967 the Army Provost Marshal General proposed to establish a voice-data network to tie together criminal investigation activities within the Army. GAO found that the objective of establishing an integrated system had not been achieved--segments of the system were being discontinued while others were being installed, one of the military police groups never was brought into the system, and the groups did not use the system to communicate with each other or with certain centralized activities. Procedures for review of this requirement were ineffective, which illustrated the need for independent review. (See p. 25.)

RECOMMENDATIONS OR SUGGESTIONS

GAO proposed that the Secretary of Defense study:

- The feasibility of a centralized DOD activity having authority and responsibility for selecting the means of providing new service after the appropriate levels approve the need for the service. Consideration should be given to the cost of a centralized validation office compared with the costs of the dispersed functions as now performed.
- Providing the centralized activity resources including a complete inventory of communications facilities (or, as an alternative, access to such information) and data on their traffic volume and purposes.
- Assigning the activity responsibility and authority for controlling the scheduling and monitoring the qualitative aspects of the periodic reevaluations of existing services and for determining whether such services could be provided more economically, but with acceptable effectiveness, by other means, particularly where common-user facilities are available.
- Whether the criteria for reviewing requirements at the Office of the Secretary of Defense or military department levels should be redefined as being applicable to total contemplated (or actual) network costs rather than to individual increments to networks.
- Whether present criteria for reviewing at departmental level should be lowered.
- The need for a directed requirement that requests for communications services provide information needed for selection of the most efficient and economical method of fulfilling the requests.
- The need for the remaining parts of the Military Police Network that is discussed on pages 25 to 27. (See p. 35.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

In response, DOD advised GAO that studies, which were expected to take up to 6 months to complete, were being initiated to examine into each of the above proposals. DOD advised also that it would forward a response to the proposals upon completion of the studies. (See appendix.)

Subsequently GAO was informed that responsibility for the conduct of these studies had been assigned to the Joint Chiefs of Staff. GAO plans to evaluate the results of the studies. (See p. 37.)

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Letter dated July 7, 1971, from the Acting
Assistant to the Secretary of Defense
(Telecommunications) to the General Ac-
counting Office

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ABBREVIATIONS

AUTODIN Automatic Digital Network
AUTOVON Automatic Voice Network
CONUS Continental United States
DCA Defense Communications Agency
DOD Department of Defense
GAO General Accounting Office

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CHAPTER 1

INTRODUCTION

A Department of Defense goal is to have a single, integrated, long-distance communications system capable of supplying reliable, rapid, and, when necessary, secure means of exchanging information. In 1960 DOD established the Defense Communications System and the Defense Communications Agency (DCA) to supervise this worldwide, long-distance, Government owned and leased system. As it has evolved, the system does not include all the communications services used within DOD. Principal exclusions are (1) post, camp, base, and station terminal facilities and (2) purely tactical facilities and those organic to weapon systems. The system, and hence the management purview of DCA, stops at the point of interface between the system and the connecting terminals of posts, camps, bases, and stations; which is considerably less than a total system on a user-to-user basis.

Communications services, whether or not a part of DCA's system, are classified as major or minor on the basis of cost. DOD classifies as major those services it leases¹ for \$200,000 a year or more and as minor those that cost less.

DOD requires that the military departments obtain approval at the Office of the Secretary of Defense level before implementing major communications services but has delegated to the military departments authority for determining and approving their needs for minor communications services.

After the need for a communications service has been approved, it must be validated; that is, determined to be technically feasible, compatible with other services, and capable of being funded. Validating offices are responsible for determining the most advantageous methods of fulfilling

¹DCA's system in the continental United States (CONUS) includes both Government owned and leased services, but mainly the latter.

new requirements, considering existing facilities and services.

Each military department is responsible for designating a validation office to process its requirements. The Army Strategic Communications Command and the Naval Communications Command Headquarters are validation offices for the Army and the Navy, respectively. The Air Force Communications Service validates most Air Force requirements. The Strategic Air Command and Aerospace Defense Command, however, approve and validate their own tactical requirements, and Headquarters, Air Force, approves and validates certain of its requirements and the tactical requirements of the Air University.

Requests for services to be furnished by common-user networks¹ in CONUS--principally the Automatic Voice Network (AUTOVON) and the Automatic Digital Network (AUTODIN)--are forwarded to DCA's Western Hemisphere Area Office, Fort Carson, Colorado, for review. This is another examination for technical adequacy and compatibility with the networks.

Validated or revalidated requests are submitted to the Defense Commercial Communications Office of DCA which is the DOD office responsible for leasing long-distance services. This office is responsible only for leasing the requested services and not for evaluating the need for the requested services, determining the availability of existing services that may satisfy the requests, or suggesting alternative means of providing the services. Short-distance and local services are procured by the installations involved.

After a service is installed, the user is responsible primarily for justifying its retention. Thus the user determines the initial need and also the need for retention of the service. With respect to minor communications services, these determinations are made without effective independent review and coordinated control, as discussed in chapters 2 and 3.

¹A network providing general-purpose services to a large number of subscribers for the transmission and receipt of various types of messages.

In a previous report, we recommended that the Secretary of Defense establish the position of Assistant to the Secretary of Defense (Communications) and give that position sufficient authority and funding overview to enforce policy decisions concerning all DOD communications matters. We recommended also that the Secretary consider removing DCA from the chain of command under the Joint Chiefs of Staff and making the position of Director of DCA a civilian post to provide a direct relationship between the Director of DCA and the new Assistant and to eliminate doubt concerning parochial interests.

On May 21, 1970, DOD Directive 5148.6 established the new position of Assistant to the Secretary of Defense (Telecommunications). One of his functions, as set forth in the directive, is to:

"Review JCS [Joint Chiefs of Staff], Military Department and DOD component validated telecommunications requirements to reaffirm the need thereof, including priorities for their fulfillment, and recommend alternatives as appropriate."

This directive provided a focal point for communications in DOD. We believe, however, that the effectiveness of this directive will be dependent upon the authority and resources provided by the Secretary of Defense and the degree of cooperation given by DOD elements to the new assistant. No further action was taken on our recommendations concerning the chain of command to DCA and the appointment of a civilian director. DOD informed us, however, that the chain of command to DCA remained an issue for active consideration.

DOD is spending about \$236 million a year for leased communications services in CONUS. This includes about \$49 million for major services and about \$187 million for approximately 50,000 leases for minor services. It does not include the costs of terminal facilities and such intra-installation services at posts, camps, and stations as base telephone systems, which are procured by the installations involved. More than 13,000 of these leases having a total yearly lease cost of almost \$74 million, about 30 percent of the total, are for services dedicated to a particular user, contrasted with common-user services.

SCOPE OF REVIEW

Our review included an examination into policies and procedures established within DOD for the use and control of communications services, primarily leased minor services, in CONUS. We made the review at the Office of the Secretary of Defense and at DCA's and the military departments' headquarters and various field offices and installations.

We did not attempt a scientifically determined random selection of cases for the purposes of this limited review. The cases were selected with the objective of including examples within each of the military departments and examples of various types of communications services.

We examined into 21 selected communications services or requirements, eight of which we discuss in this report. (See p. 27.) We discuss also two additional examples where the Army was able to effect cost savings through improved procedures. (See p. 23.)

CHAPTER 2

MOST NEW COMMUNICATIONS REQUIREMENTS

HAVE BEEN EXCLUDED FROM HIGHER DEPARTMENTAL REVIEW

Less than 1 percent of the total number of DOD's leased communications services in CONUS required approval at the Office of the Secretary of Defense level.

In the Navy approval authority for all minor communications requirements has been retained at the headquarters level. Since August 1969, as an interim measure, the Air Force has assumed authority at departmental level for approval of all minor Air Force communications requirements. Authority for approving most services in the Army rests with the using major commands, because individual communications services usually cost less than the amounts established as criteria for obtaining approval at higher levels. This condition also prevailed in the Air Force prior to August 1969.

These services, although individually classified as minor, frequently are increments to communications networks having substantial annual leasing costs. We believe that it is appropriate, therefore, that the need for services be reviewed by a higher and an independent authority when the cost of the total system, of which the instant services often are only components, exceeds the established threshold.

Communications costs also are reviewed in the Office of the Secretary of Defense during the budget process. In the case of minor communications requirements, however, the review focuses primarily on budget categories, and individual minor communications requirements are not identifiable. There has been more detailed reporting and thus improved visibility of communications costs during the past 2 years. Additional steps are being taken or are planned within DOD to improve this visibility.

INDEPENDENT REVIEW BY HIGHER AUTHORITY
LIMITED UNDER CURRENT DIRECTIVES

In accordance with DOD Directive 4630.1, Programming of Major Telecommunications Requirements, dated April 24, 1968, the classification of a communications requirement determines the level of review and approval required. The authority to review and approve major requirements (for services having individual leasing costs of \$200,000 or more a year) is at the Office of the Secretary of Defense level. The authority to review and approve minor requirements (for services having individual leasing costs of less than \$200,000) has been delegated to the military departments.

The Army redelegated to major commands the authority to approve each minor requirement for services estimated to cost less than \$100,000 a year. The same redelegation of authority existed in the Air Force until August 1969 when Headquarters, Air Force, withdrew it from the commands. This withdrawal was an interim measure to comply with a fiscal year 1970 budget decision of the Secretary of Defense, and it is still in effect. In the Navy the Chief of Naval Operations has retained approval authority for all minor communications requirements.

According to representatives of the Office of the Assistant to the Secretary of Defense (Telecommunications), the \$200,000 threshold was established in 1968 to reduce the volume of communications requests that were then being submitted to the Office of the Secretary of Defense for approval. Prior to the increased level established in 1968, the DOD directive set the lower limit for a major requirement at \$100,000. The representatives said that the present threshold was unrealistic and that efforts were being made to lower it.

As of May 1970 records of leases for services, including those in the Defense Communications System and those not a part of the system, showed that only 55 (of approximately 50,000) leases were classified as major requirements by applying the \$200,000 threshold. This is about one tenth of 1 percent of the total number of leases and represents about 21 percent (\$49 million) of the total annual leasing costs. This small number of leases may not be all of those

approved at the Office of the Secretary of Defense level, because some leases below the threshold may have been approved as part of a subsystem or project plan. Records of such approvals, if any, however, were not available.

Excluding Navy leases, all of which receive departmental approval, only 108 CONUS leases exceed the Army and permanent Air Force threshold of \$100,000 each in annual cost. Including Navy leases, only 111 CONUS leases have annual costs in excess of \$100,000 each. They constitute about two tenths of 1 percent of the number of leases and cost about \$57 million, or about 24 percent of the total annual costs. This includes the one tenth of 1 percent of the number of leases which are over \$200,000 each annually and which qualified for review at the Office of the Secretary of Defense level.

The above indicates that most communications requirements within CONUS are individually inexpensive, and this is due to the fact that requests prepared and approved within the commands involve, for the most part, leases for (1) circuitry from point to point and related terminal equipment, (2) circuitry from a switching center to a service point and related terminal equipment, or (3) terminal equipment only. Such services are often only a part of a network that is being established or an adjunct to an existing network or service. We believe that the use of this incremental or piecemeal method of obtaining services obscures the total configuration, purpose, and cost of a network or service. Also it bypasses a more independent overview which presumably could be performed at higher levels with the objective of achieving a single communications system within DOD, rather than a narrower, more parochial objective.

The following examples illustrate the type and size of communications networks or services which have been acquired on an incremental basis and which did not meet the criterion for Office of the Secretary of Defense or military department review.

1. Air Force Personnel Facsimile Network

This network is used to transmit reproductions of documents between Air Force elements at Randolph Air

Force Base, Texas; the Washington, D.C., area; Denver, Colorado; St. Louis, Missouri; and San Antonio, Texas. The network has 15 terminals, 13 of which are connected to a switching facility in Texas. The current lease cost of the network is about \$110,000 annually under 28 leases, the most expensive one costing about \$9,400 a year.

2. Army Military Police (Criminal Investigation) Network

This network was proposed in 1967 to provide voice-data communications services between the five military police groups, their principal detachments, and other investigative offices. As envisioned, the network was to have about 35 terminals located throughout CONUS. Although we inquired and searched, we could not find a cost estimate for the proposed network. As of July 1970, the network had 22 terminals and the leasing costs had reached \$201,000 a year. The services were being provided under 22 leases, the most expensive of which was about \$16,600 a year. The network was approved in increments within the Department of the Army and was not submitted to the Office of the Secretary of Defense for approval, apparently on the basis that none of the increments exceeded the \$200,000 threshold.

3. Military Airlift Command Logistics Readiness Network

This is a voice network, established in 1966, to provide direct telephone communications between the command headquarters, Scott Air Force Base, Illinois; McGuire Air Force Base, New Jersey; Travis Air Force Base, California; and 10 other Air Force locations. It has over 10,000 miles of leased circuitry, a switching capability, a conferencing arrangement, and a two-digit dialing feature. These facilities are provided under 13 leases, none of which exceed \$12,500 a year; the total annual leasing cost is about \$93,000. This extensive network, even if processed as a single entity, would not have required, under permanent Air Force regulations, approval at departmental or Office of the Secretary of Defense level.

INDIVIDUAL REQUIREMENTS NOT IDENTIFIABLE
IN ACCOUNTING SYSTEMS OR BUDGET REVIEWS

Our review of budgeting and accounting systems within DOD and our discussions with DOD officials showed that individual minor communications requirements were not identifiable. Consequently the thousands of individual minor requirements which constituted the major part of the cost of communications leases discussed in this report are not reviewed for need at Office of the Secretary of Defense or military departmental level during the budget process.

Our review showed that there had been greater visibility of total DOD communications costs over the past 3 years due to a requirement imposed by the Deputy Secretary of Defense that this information be submitted in more detail as to using organizations and cost categories and in a separate budget package. Visibility of individual minor communications requirements, however, is not provided. Furthermore the budget amounts are based on estimates rather than historical costs.

As stated by one DOD official in March 1970 during congressional hearings on the fiscal year 1971 budget:

"*** there is no formal system to account for Defense Communications System costs in the Department of Defense. Therefore, the previous figures were estimates, as are the figures for this year."

* * * * *

"*** there is no formal accounting system in the Department of Defense to account for communications systems. Therefore, the estimates that we derive through our analysis are based upon information where we can go into the existing systems and draw out pieces and put them together ***."

To correct this condition, DCA has attempted to establish a functional category for communications costs so that more accurate information on communications expenditures could be accumulated. We were told that this attempt had

been unsuccessful. The Office of the Assistant Secretary of Defense (Comptroller), however, was performing a study of functional categories in general and was preparing a directive to establish a financial reporting system which, if approved, would require quarterly reporting of communications expenditures in some detail for each installation. Also the Assistant to the Secretary of Defense (Telecommunications) planned to consider the overall issue of visibility of telecommunications resources early in 1971. In view of these actions, we have no recommendations at this time concerning the identification of communications costs in accounting systems and for budgetary review purposes.

CHAPTER 3

MINOR COMMUNICATIONS NOT SUBJECT TO

INDEPENDENT EVALUATION AND COORDINATED CONTROL

Minor communications services are not subject to an effective, independent evaluation and coordinated control. The absence of information with which to evaluate the aggregate of individual requirements from a DOD systemwide viewpoint precludes coordinated control of minor communications. DOD has not established a complete inventory of its communications resources; information on use is often not available and, when available, is not always reliable; and users do not always indicate the purpose of their requirements. Furthermore the incomplete information which is available is available only in part to the offices responsible for reviewing or validating new requirements and existing resources.

Without adequate information, a reviewer is not in a position to determine whether existing resources are adequate to satisfy new requests for services or, in reevaluations, whether existing resources should be retained, reconfigured, or eliminated. Thus new requirements and existing resources have not been evaluated from a comprehensive or coordinated DOD systemwide viewpoint. Also periodic reevaluations of existing resources are not always made and, when made, are performed by the users themselves.

Consequently we believe that the users generally have been able to obtain, subject to the availability of funds, the type of services wanted and that users generally can retain the services desired without comprehensive independent reevaluations.

Although it might be argued that a using organization should have complete responsibility for the type of services provided within its operating budget, we believe that this philosophy conflicts with the stated objective of achieving a single communications system within DOD because such a system, in our opinion, requires strong central direction.

The following sections of this chapter discuss the procedures employed and some examples of the costly effects of

the lack of independent evaluation and coordinated control, from a systemwide viewpoint, of minor communications within DOD. We believe that the examples are illustrative of the potential benefits obtainable from evaluation by a central office having systemwide information and authority to implement the most efficient, effective, and economical method of fulfilling communications needs.

NEW MINOR COMMUNICATIONS REQUIREMENTS
NOT COORDINATED WITH EXISTING RESOURCES

Validating offices¹ are responsible for determining the most advantageous means of fulfilling new requirements, considering existing facilities and services. A validating office has information identifying the services it validated but does not have information on services validated by other military departments and agencies. Also the Air Force Communications Service does not have information on services validated by the Aerospace Defense Command, Strategic Air Command, or Air Force Headquarters. Furthermore a validating office seldom has access to information on the use being made of services it has validated.

Although DCA has certain information relating to assets of the Defense Communications System, the information is located at two DCA field offices--neither of which has complete data. Also DCA does not have information on resources which are not a part of the system, nor on the use being made of these services.

Thus there is within DOD no central inventory of total DOD communications resources or central point of information on the uses being made of resources. Requests for new services often lack sufficient explanatory information to permit adequate consideration of alternative means of satisfying the requirements.

No complete inventory of
communications resources

DCA is responsible for maintaining a directory of facilities and circuitry under its jurisdiction--the Defense Communications System.

Although DCA's Western Hemisphere Area Office has certain information relating to assets of the Defense Communications System, it is not required to accumulate, and does not have, information on the resources which are not a part

¹See p. 4 for identification and description of responsibilities.

of the system. These are generally self-contained facilities within commands or tactical organizations and intra-installation facilities. For system resources (Government owned and leased) DCA's Western Hemisphere Area Office prepares a data base directory which shows for each circuit the locations receiving service, points of interconnect, associated circuits, service availability, speed and type of service, and other technical details. Government owned and leased resources which the user classifies as not being part of the system and related details are not included in the Western Hemisphere Area data base directory.

DCA's Defense Commercial Communications Office, located at Scott Air Force Base, although not involved in the validation process, does maintain a circuit inventory of services it has leased. Although this inventory includes certain services not contained in the Western Hemisphere Area data base directory--i.e., leased resources which are not a part of the system but which are directly connected to the system--it does not include technical information, such as interconnecting points, speed of service, and associated circuits nor does it include information on Government-owned resources.

Furthermore certain leased services acquired at base level are not contained in either the Western Hemisphere Area data base directory or the Defense Commercial Communications Office circuit inventory, and neither of these information sources reflects the existence of unused multiplex channels. (See p. 18.) Also, with the exception of AUTOVON and AUTODIN, these DCA offices have only fragmentary information on traffic volume. At the time of our review, the Western Hemisphere Area was not receiving copies of periodic compilations of the circuit inventory of the DCA leasing office.

It should be noted that DCA is in the process of establishing, in addition to its circuit inventory, a computerized file of communications resource data which will provide additional data pertaining to the physical and operational environment of the Defense Communications System. This inventory, however, will exclude those facilities which are neither part of nor required to support the system. Thus it will not constitute a complete inventory of DOD communications facilities.

The two following situations illustrate the more penetrating reviews that could be performed and the management actions that could be taken by a DOD central office having adequate inventory and use information.

1. Multiplexing

The Air Force has a number of leased multiplexers, devices that divide a single communications circuit into a number of data channels. A set of these devices, one at each end of a circuit, can provide as many as 20 data channels for transmission over the circuit. We found that the Air Force was using only eight channels for time-shared computer services between Scott Air Force Base, and Griffiss Air Force Base, New York, leaving channels available for additional requirements. The Army was leasing a circuit that nearly paralleled the Air Force circuit to obtain service from the same computer complex. Also the Army was processing a requirement for two additional circuits and had received approval to connect to the computer.

The Air Force was unaware of the Army requirements and the Army was unaware of the available Air Force channels. Although the Air Force circuit was a Defense Communications System circuit, the data base directory of DCA's Western Hemisphere Area Office, the office responsible for cataloging system facilities in CONUS, did not contain the data on available, unused channels. Officials of that office advised us that the recording of use data in DCA's data base directory was not required and that they therefore were unable to identify the available, unused channels.

We had informed the Army and the Air Force validating offices of this situation and were advised that the Army's requirements (three circuits) would be met by using three of the unused Air Force channels. We estimated that such action would result in savings of about \$14,500 annually. Subsequent to the completion of our fieldwork, we were advised also that this action was no longer possible

because of the loss of time-sharing capacity at the computer complex and that the savings would not be achieved in this case.

We believe that a central authority, with total system information, would be in a position to coordinate the acquisition of such services and thus permit the achievement of economies.

2. Microwave system

According to a DCA official, there are 12 spare channels in a Government-owned microwave system between the Pentagon and Andrews Air Force Base, Maryland. Concurrently seven other circuits, at least one for each military department, were being leased at a total cost of about \$6,000 a year to provide service between these same locations. Sufficient information had not been assembled to permit us to obtain from DCA a technical evaluation as to whether the spare microwave channels could be used in lieu of the leased circuits. Use of the alternative Government-owned facilities, however, had not been considered. DCA's Western Hemisphere Area officials gave the following possible reasons for this.

- It was impracticable to maintain an updated listing of resources for the use of the various validating offices because of the large number of daily actions. The only current data base for CONUS was maintained by DCA's Western Hemisphere Area, and this was limited to Defense Communications System facilities.
- DCA's Western Hemisphere Area was not responsible for reviewing all requirements to ensure maximum use of available resources. In general, it reviewed only Defense Communications System requirements and did not receive information on requirements which were not part of the system.
- The military departments could unilaterally classify new minor communications facilities as non-Defense Communications System assets and, when they did, DCA's Western Hemisphere Area received no data on them.

Data on use of resources not adequate
for management purposes

Insufficient or incorrect data on the use of services can result in the retention or addition of unneeded services. Therefore traffic studies are essential to efficient management of communications services. Data collected in such studies can be used to determine whether existing facilities (1) are adequate to satisfy new requests for additional services, (2) should be increased or decreased to provide an acceptable grade and level of service, (3) should be discontinued, or (4) should be reconfigured.

We found instances where traffic studies had not been made but should have been made. We found also instances where study reports contained inaccurate data and conclusions. Further we found instances where studies had been made by the user but the study reports had not been submitted to the user's validating office or higher review levels.

The military departments and DCA recognize that traffic studies are desirable and suggest that they be made, especially of base administrative telephone services including general purpose AUTOVON access lines. Although traffic studies are made of administrative telephone services, we found that there were no policies, directives, or regulations requiring that studies be made of dedicated networks¹ or other circuitry and facilities controlled by the commands.

The more thorough review possible through the use of traffic data is illustrated by the following example.

Air Force Personnel Facsimile Network--This network (described on p. 10), in existence since 1963, should have been evaluated a number of times under Air Force procedures which required a semiannual reevaluation of the need for communications services. (See p. 29.) Although we did not examine into the complete history of reevaluations, the most recent was made in 1969.

¹A service that is provided to a relatively limited number of subscribers for a particular function.

(See p. 31.) In such evaluations it seems evident that terminal traffic data should have been considered. We found that traffic data had been developed for only 10 of the 15 network terminals. At our request, traffic data were obtained for all the terminals. Analysis showed that average use, by location, ranged from 18 minutes to 5 hours a day. On the basis of this information, Air Force officials discontinued four terminals and related circuitry. We estimate that savings will be \$23,700 annually. The remaining terminals are providing the services, but the Air Force is studying these for possible further reductions.

Our examination in two major Army commands showed that there were varying practices for making traffic studies. The Army Materiel Command has established a small group to make studies of its own installations. The studies include administrative lines and AUTOVON but not other lines controlled by the command, such as command and control lines, and other dedicated services. With the exception of data on selected AUTOVON lines, the Strategic Communications Command (the Army validating office) does not receive the results of the Army Materiel Command studies.

Headquarters, Continental Army Command, does not have a traffic study capability and has assigned the responsibility for making such studies to its subordinate elements. One subordinate element was making extensive studies of all circuitry under its control. These studies, however, did not cover the services controlled by tenant organizations. Another subordinate element does not make traffic studies. Prior to July 1970 the Army validation office did not receive traffic study data from this command. Thereafter, at the request of the validation office, selected AUTOVON studies were to be received from two of the four Armies of the Continental Army Command.

In the Air Force, traffic studies are made by a component of the Air Force Communications Service. These studies principally cover base services. They do not include dedicated lines controlled by the Air Force commands. The validating office of the Air Force Communications Service does not receive traffic study data.

We found no evidence that traffic studies were made by the Navy, and a representative of the Navy validating office confirmed that the office did not receive traffic study data other than for AUTOVON and AUTODIN.

Information on AUTODIN traffic is automatically generated within the system and provided to users. Traffic studies of AUTOVON are made by the common carriers and are given to DCA. DCA, in turn, provides the military departments with the traffic study data. The studies, along with other data, indicate the current level of service and the lines necessary to obtain a desired level of service.

Officials of DCA and the military departments said that the carrier studies could be used only as trend indicators, because they contained errors and lacked required data. For example, the Navy validating office had traffic studies for AUTOVON but used them only as guides. Also an Air Force official stated that experience had shown that AUTOVON studies frequently contained errors. An analysis of the traffic studies of Air Force AUTOVON service for 1 month revealed over 130 errors. The Army validating office, which received the traffic studies on AUTOVON and some other limited studies, complained that the AUTOVON studies showed:

- Incorrect circuit quantities serving locations.
- Erroneous configuration of lines.
- Exclusion of user locations from studies.
- Inclusion of non-Army locations.

The benefits of using reliable traffic study data can be illustrated by the experience of the Army Strategic Communications Command. This command, as a part of its management function, makes traffic studies of selected Army AUTOVON access lines. Command officials said that their traffic studies were more accurate than those made by common carriers and resulted in significant cost reductions in Army AUTOVON service. They said that substantial savings could be achieved through studies of the AUTOVON access lines; for example, the deletion of a single line at each of its approximately 230

locations would reduce the system cost about \$400,000 a year. They told us that the following examples were representative of the results of their traffic analyses.

1. Fort Campbell, Kentucky

This installation was being served by 17 AUTOVON access lines. Common-carrier studies showed 10 blocked inward calls for each 100 attempts. The carrier, on the basis of studies over an 8-month period, recommended that additional lines be installed, and seven lines were added. Thereafter the Strategic Communications Command made a study which resulted in the removal of three of the lines with resulting cost savings of \$5,400 a year.

2. Iowa Army Ammunition Plant, Burlington, Iowa

Carrier studies at this plant showed 10 blocked inward calls for each 100 attempts and a need for three more lines. After a Strategic Communications Command study, only two lines were installed and an acceptable level of service was provided. The annual savings by not installing the one line approximated \$1,800.

Information incomplete on new requirements

Data needed to evaluate a requirement and to determine the best means of satisfying it include such performance data as volume of traffic to be handled, purpose of service, frequency of transmission, and timeliness of transmission required. This kind of data, however, frequently is excluded from the requests to a validation office for services. Such requests show only data needed to effect leasing, such as the specific circuitry and terminal equipment required. For example:

AUTOVON access to Mukilteo Air Force Station--A request was submitted by the Air Force Logistics Command to the Air Force Communications Service for validation of a two-way circuit between Mukilteo Air Force Station, Washington, and McChord Air Force Base, Washington. The request described the service as follows:

"Install full period, 4 wire, two-way voice circuit between the above locations. Terminate circuits in switching equipment at McChord to allow direct dialing thru McChord exchange. Terminate circuit in three (3) desk sets and key equipment at Mukilteo. Circuit is to be configured to allow direct dialing thru the McChord PBX [private branch exchange] to and from McChord offices, AUTOVON and other leased circuits available to McChord."

The requirement was validated as submitted, and a circuit was leased to provide the service.

Air Force policy is that where limited service, such as station access to AUTOVON, is required, such access be provided through the nearest DOD facility, if possible. Although Fort Lawton, Washington, is nearer to the station than is McChord, an Air Force Logistics Command representative stated that other DOD activities in the area were not considered as access points because the air base was to furnish, in addition to AUTOVON access, logistical support to the station. But AUTOVON access could have been provided through Fort Lawton, and the service could have been used also for logistical support from McChord. Because the request did not show that the primary purpose of the requirement was to provide station access to AUTOVON, the validating office did not consider this alternative.

ABSENCE OF INDEPENDENT EVALUATION
OF NEW REQUIREMENTS

The authority of the Army and the Air Force validating offices is limited to suggesting alternative methods of meeting requirements, and the using commands can accept or reject their suggestions. The Navy validating office selects the facilities and services. Similar to the Army and the Air Force, DCA has little authority and can only suggest alternative methods of meeting requirements through Defense Communications System assets. The method of validation and approval in the example discussed below illustrates the need for a strengthened review process.

Army Military Police Network¹-- In December 1967 the Army Provost Marshal General proposed that his office and those of the Provost Marshal, Continental Army Command; five military police groups of the Armies; and the Crime Laboratory, Fort Gordon, Georgia, be connected by a voice-data teletypewriter network using AUTOVON facilities. This was to be the initial increment of a network that would eventually include the principal detachments and the field offices of the military police groups.

In October 1967 the 1st Army Military Police Group, aware of the proposal, requested AUTOVON voice-data service for the group headquarters' detachments. In October and November 1968, the service was installed. Service to the Continental Army Command Provost Marshal's Office was added a year later, in September 1969.

We were told that the requests had not been reviewed at Headquarters, 1st Army, because it was assumed that the Army Provost Marshal had decided on the service needed and how it was to be fulfilled. Alternative methods of providing the service were not considered.

The requests were forwarded to the Continental Army Command, the next highest command level. The

¹See p. 11.

command requested additional justification and coordination with the Army Intelligence Command which has a similar network. After receipt of some additional information, but apparently without the coordination of the Army Intelligence Command, the requests were forwarded to the Army Assistant Chief of Staff for Communications-Electronics without approval or disapproval. We were told by a command official that its communications office did not agree that the network should be created but that, because it had been considered at higher levels and required further approval, the requests were forwarded to the departmental level of the Army.

At the departmental level, two alternative methods to fulfill the requests were considered: (1) teletypewriter exchange service and (2) leased dedicated circuits and equipment; both were rejected. Two additional methods--AUTODIN and the Army Intelligence Command Network--did exist; however, we found no evidence that they were considered. The requests were approved as submitted and were forwarded to the Joint Chiefs of Staff. That office approved the requests, but it could not provide us with information on the nature of its review. The requests were then forwarded to the Army validating office, the Strategic Communications Command. At that office we were told that alternative methods had not been considered because higher levels had proposed and approved the method to be used.

In January 1970, about 14 months after the 1st Army Police Group Network was installed, it was disconnected, including the circuit serving the Continental Army Command Provost Marshal's Office. The commander of the group told us that, in view of the estimated annual network costs--\$54,000--it was too expensive to justify retention. Although records were not available showing the use of the network while in operation, we estimated, on the basis of discussions with the users, that the combined use of the five detachment terminals amounted to 7.5 hours a day. Also we were told that the network was not used to communicate with other police groups or with the Crime Laboratory. The commander commented that the loss of the network was

detrimental to the operations of the group; however, it is currently using telephone service for priority matters and mail for routine business.

The 4th Army Police Group Network was installed in September and October 1969, about a year after the 1st Army Police Group Network was activated. In May 1970, 4 months after the 1st Army Police Group Network was disconnected, the 3d Army Police Group Network was installed. Both networks were in operation at the time of our audit. The 5th Army Police Group Network was installed also in the latter part of 1969, but was disconnected within a year. The 6th Army Police Group did not have a network as of June 1970 and had not requested such service.

With the exception of the 1st Army Police Group Network, the requests for the other numbered Army Police Group networks were not processed through the Continental Army Command's communications staff. The staff was unaware that the other networks had been installed.

It seems evident that the absence of a coordinated review by an independent authority had the following results: (1) the objective of the Army Provost Marshal General to establish a total system was not achieved, (2) segments of the system were being discontinued while others were being installed and two were in existence only a short time, (3) one of the groups never had a network, and (4) the system as it evolved was not used by the groups to communicate either with each other or with certain centralized activities.

We believe that the circumstances in this case indicate the need for an independent review of the remaining segments of the Army Military Police Network.

Of the 20 other cases we examined into, four Air Force cases, six Army cases, and a joint Army-Air Force facility case were not reviewed at departmental level because of the \$100,000 limitation for review at that level. In these 11 cases, our examination of the review process at lower levels frequently was hampered by the absence of documentation relating to the scope of review. Further, although all Navy

requirements were approved at departmental level, we were not able to determine the quality of any reviews made of the six Navy cases because no records of reviews were maintained. Three Air Force cases were reviewed at departmental level because of special circumstances. We examined into the review made on one of the three and found it to have been adequate.

The designation of a central manager, having responsibility and authority for an independent review of the justification for new requirements, could provide the focal point for review of requirements from the standpoint of systemwide effectiveness and methods to fulfill them. It would also be a step toward the objective of establishing a single communications system for DOD.

REEVALUATIONS NOT MADE INDEPENDENTLY
NOR COORDINATED WITH RESOURCES DATA

We believe that our observations concerning the need for a rather complete inventory of DOD communications resources, traffic data on those resources, and better data on the purposes of required services, as discussed in the preceding sections of this chapter dealing with new requirements, also pertain to the reevaluation of existing resources, as discussed in the remainder of this chapter. Furthermore reevaluations are not always made and, when made, normally are performed by the users without guidance and effective review by higher authority.

Air Force and Army reevaluations not fully effective

We examined into the practices of two commands in the Army¹ and two commands and a staff activity in the Air Force. Army procedures provide for an annual reevaluation and Air Force procedures provide for a semiannual reevaluation of the need for communications services. We observed that often:

- The periodic reevaluations were made without specific guidance, standards, or techniques provided by the military departments or their communications commands or staffs.
- The commands that authorized and used the services determined whether they should be continued.
- Rejustifications by the user (command or subordinate element of a command) of a service frequently were phrased in broad terms, such as "a review of our leased circuits/equipments reveals that all are required."

¹In one of the Army commands, however, a small group had been established to analyze administrative communications circuits and recommend changes. Generally the group did not analyze dedicated command and control circuits. This command also had provided some guidance and standards to subordinate elements for use in these reviews.

--The military departments' communications commands furnished technical assistance, if requested by the user of a service, but did not have the responsibility for evaluating the user's need or the authority to disapprove the need.

--No activity, apart from the using command, was responsible for an independent, critical, and objective appraisal of the technical and economic considerations necessary to ensure that service was being provided in the most efficient, effective, and economical manner from a systemwide point of view.

That the reevaluations were not fully effective is illustrated, we believe, by the following examples.

1. Army emergency circuits

Two dedicated circuits were installed in 1968 between Fort Sheridan, Illinois, and Fort Carson, Colorado, to fulfill emergency communications requirements arising during periods of civil disorders. Periodic traffic studies had not been made. Discussions with the communications staffs during our review showed that the circuits were being used for administrative purposes. We estimated that AUTOVON would have been a less costly means of providing this service.

A Strategic Communications Command official agreed that AUTOVON service would meet the users' requirements, would be less costly, and should have been considered during the annual reviews. He also questioned whether the emergency conditions that justified the circuits in 1968 still existed. One official said that there was no evidence that these circuits were evaluated during the 1968 or 1969 reviews.

During our review of the two circuits, we brought this matter to the attention of the Continental Army Command. The command requested that the user reevaluate the need, and after reevaluation both circuits were disconnected. We estimate the savings from these actions to be about \$11,400 annually.

2. Air Force Personnel Facsimile Network

This network, described on page 10, was reviewed by the user for continuing need in 1969 but not in 1970. We were unable to identify the reason for the 1970 omission. After completion of the 1969 review, the Air Force Communications Service was notified that the network would be retained. The notice contained no documentation to support the decision, and the using officials could not provide any.

As stated on page 21, our analysis of network traffic data and disclosure of the results to Air Force officials resulted in the discontinuance of four terminals and related circuitry.

We believe that, if an effective review and independent evaluation had been made of this network in May 1970, the scheduled time for the semiannual review, it is probable that the Air Force would have had sufficient basis to discontinue the circuits and terminals.

3. Air Force Logistics Readiness Network

When the Military Airlift Command established this network (see p. 11) in 1966, the logistics managers of the command decided that AUTOVON, the common-user voice network, could not provide the required service (switching, conferencing, and two-digit dialing). The managers stated, however, that the dedicated network would be integrated into a common-user network when it could provide the service needed.

From 1967 the logistics managers periodically reviewed this network and concluded that it was needed. In 1967 a special review was made of the network and a written justification for its retention was submitted to the command communications organization. The justification included a description of the network, the purpose for which it was used, the claimed benefits derived from its use, and a statement indicating that it was less costly and more efficient than AUTOVON.

DCA officials, in response to our inquiry, suggested a method of utilizing AUTOVON whereby the technical and operational requirements could be satisfied at less cost to the Government. The method suggested was to home all members of the dedicated network on a single AUTOVON switch that was not being fully utilized. This would avoid the possible requirement for leasing any additional lines between switches and would use the capacity of the underutilized switch and thus reduce costs. Also the switching, conferencing, and two-digit dialing services would be provided under this method. The AUTOVON service suggested by the DCA officials has been available since 1966, except for the two-digit dialing feature. (The two-digit dialing feature is a refinement which permits connection by dialing two, rather than the normal seven, digits.)

In June 1970, on the basis of the result of a special DOD project which had been established to make an independent determination of whether dedicated networks should be integrated into common-user systems, Headquarters, Air Force, directed that the Logistics Readiness Network be eliminated and the facilities of AUTOVON be used.

The broad and general statements which had been used to justify this network were not, in our opinion, susceptible to a sufficiently thorough analysis and evaluation, either from a technical or an economic standpoint. It appears to us that an effective semiannual review could have determined earlier that this network should have been terminated.

4. Continental Army Command Dedicated Voice Network

The Continental Army Command has a dedicated voice network costing about \$25,000 annually, which connects the command headquarters with its numbered armies and with other locations. The network was completed in October 1969 to provide a conferencing arrangement. At that time this arrangement could not be provided by AUTOVON. The request submitted to the validating office for the dedicated circuits stated that the service would be required until AUTOVON's conferencing arrangement was available. Although AUTOVON's service was available

from January 1970, the dedicated service still existed at the time of our review.

No traffic analysis had been made of the dedicated service. Personnel of a subordinate element of the command said that the dedicated service duplicated AUTOVON service. In response to our inquiry, an Army Strategic Communications Command official agreed that duplication existed. A review was made by the Continental Army Command Staff communicators in May 1970 and they recommended to the command the removal of the dedicated service.

In rejecting the recommendation, the user (the command) stated that:

"There is a demonstrated need for continuance of dedicated voice circuits which overshadows any potential cost savings accruable through discontinuance. Also, operational limitations associated with AUTOVON militate against sole reliance on alternate means."

We recognize that the user should have a voice in decisions affecting its operational capabilities. We believe, however, that decisions regarding the method of providing the required services should receive an independent review by higher authority, particularly when, as in this situation, the communications staff has evaluated the need for the service and recommended its removal.

The Air Force recognized that there were inadequacies in its semiannual review procedures. A working group was formed in May 1970 to provide the users with additional guidance and information. At the time of our fieldwork in September 1970, the group had not made any changes to then-existing procedures.

In the Army, it was determined that the requirement for the using commands to annually reevaluate circuits within a 2-month period was not conducive to meaningful and in-depth review and guidance was developed requiring the reviews to be made throughout the year. Also forms were developed for reporting the results of the review of each circuit. The

completed forms were to be submitted to the Army Strategic Communications Command, although this command had no authority to modify the decision as to retention of a circuit.

Reevaluations not made in the Navy

Periodic reviews of leased communications services were not being made in the Navy. A Navy inspection report issued in November 1969 stated that, as a result of a special fiscal year 1970 review by Navy users, AUTOVON services costing about \$100,000 were identified as excess to requirements. The report stated that effective periodic reviews would have disclosed this condition and that the services would have been discontinued sooner.

A Navy official told us that the Navy instructions on the processing and reporting of communications requirements were being revised to include procedures for making periodic reviews.

Although the changes made or proposed to be made by the military departments in the periodic reevaluation of communications requirements should result in improved procedures, we believe that such reviews cannot be effective from a DOD-wide standpoint unless adequate consideration is given to existing DOD systemwide facilities which could satisfy such requirements. As stated previously, users and validators do not have such information. We believe also that there should be an independent and authoritative review of reevaluations at a level higher than that of the user. We recognize that the needs of the user must be given appropriate consideration in such determinations, but we believe that such assurance can be provided without sacrificing the advantages of coordinated management of minor communications services.

CHAPTER 4

CONCLUSIONS, RECOMMENDATION, AND AGENCY COMMENTS

CONCLUSIONS

Our review has shown that, although DOD has established DCA, which has a partial inventory of communications resources, no office at the Secretary of Defense level, Defense agencies, or military departments has a complete inventory or adequate data on the volume or nature of traffic through the resources. Therefore we believe that military department activities responsible for validating requests for services lack sufficient information on available resources and the use being made of them. Also they do not receive adequate descriptions of new services being requested. The Army and the Air Force communications staffs have little authority in the selection of facilities to service new communications requirements or to rearrange existing services.

We believe that the designation of a central office having sufficient authority and information to independently review new leasing requests and to evaluate them periodically as to the best method of providing the required services would provide a basis for more economical utilization of communications resources. We believe also that the operating functions associated with these responsibilities could be performed within the existing DCA organizational structure. The establishment, reevaluation, and rejustification by the users are not, in our opinion, the most effective means to achieve the objective of establishing and perpetuating a single communications system.

Although the number of cases examined during our review was too limited to permit an evaluation of the overall effectiveness of the management of minor communications within DOD, we believe that certain current policies and procedures require the attention of the Secretary of Defense.

RECOMMENDATION

Therefore in our draft report we proposed that the Secretary of Defense study:

- The feasibility of a centralized DOD activity having authority and responsibility for selecting the means of providing new service after the need for the service has been approved at the appropriate levels. Consideration should be given to the cost of a centralized validation office compared with the costs of the dispersed functions as now performed.
- Providing the centralized activity resources including a complete inventory of communications facilities (or, as an alternative, access to such information) and data on their traffic volume and purposes.
- Assigning the activity responsibility and authority for controlling the scheduling and monitoring the qualitative aspects of the periodic reevaluations of existing services and for determining whether such services could be provided more economically, but with acceptable effectiveness, by other means, particularly where common-user facilities are available. The monitoring that we have in mind would include prescribing the types of data and pattern of services that should be jointly considered in reevaluations, making compliance reviews to determine that reevaluations are performed adequately and with appropriate use of traffic studies, reporting of deficiencies through command channels, and initiating corrective actions.
- Whether the criteria for reviewing requirements at the Office of the Secretary of Defense or military department levels should be redefined as applicable to total contemplated (or actual) network costs rather than to individual increments to networks.
- Whether present criteria for reviewing at departmental level should be lowered, particularly the Army and permanent Air Force criteria.
- The need for a directed requirement that requests for communications services show details concerning the purpose of the services; expected traffic volume; configuration of the related network and terminal equipment involved, if any; and such other data that

are needed for selection of the most efficient and economical method of fulfilling the requests.

--The need for the remaining parts of the Military Police Network that is discussed on pages 25 to 27.

AGENCY COMMENTS

A draft of this report was furnished to DOD on April 23, 1971. The Acting Assistant to the Secretary of Defense (Telecommunications) advised us that DOD shared our desire to achieve improved communications management, wherever possible, and that studies were being initiated to examine into each proposal. He stated that DOD's response to our proposals would be forwarded to us upon completion of the studies, which studies were expected to take up to 6 months. (See app. I.)

Subsequently we were informed that responsibility for the conduct of these studies had been assigned to the Joint Chiefs of Staff. We plan to evaluate the results of the studies.



OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

7 JUL 1971

Mr. Charles M. Bailey
Director, Defense Division
General Accounting Office
441 G Street, N. W.
Washington, D. C. 20548

Dear Mr. Bailey:

The Secretary of Defense has asked me to respond to your GAO Draft Report, dated April 23, 1971, "Benefits from Centralized Management of Minor Communications Services" (OSD Case #3272).

The Department of Defense shares your desire to achieve improved communications management wherever possible. To this end, studies are being initiated for the purpose of examining each recommendation or suggestion outlined on pages 5 and 6 of the subject report.

A response to the recommendations/suggestions will be forwarded to you upon completion of the studies, which are expected to take up to six months to complete.

Sincerely,

A handwritten signature in cursive script, appearing to read "D. L. Solomon".

D. L. Solomon

Acting Assistant to the Secretary of Defense
(Telecommunications)

Copies of this report are available from the U. S. General Accounting Office, Room 6417, 441 G Street, N W., Washington, D.C., 20548.

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